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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/758,478

Applicant(s)

GUPTA ET AL.

Examiner

Abul Kalam

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-25, 27 and 29-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-25, 27 and 29-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 November 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____
- 7) ☐ Paper No(s)/Mail Date 8/7/06

DETAILED ACTION

Claim Status

1. Claims 14-25, 27, and 29-31 are currently pending the Application, while claims 1-13, 26 and 28 were previously cancelled.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims 14, 16-20 and 29** are rejected under 35 U.S.C. 102(e) as being anticipated by Takano et al. (US 2003/0176005, presented in previous Office Action).

With respect to claim 14, Takano teaches a method of fabricating an organic electronic device (**FIGs. 11-16; ¶ [0121]-[0127]**), said method comprising:

patterning a lower electrode layer (**511; FIG. 12**) upon a substrate (**501**), said lower electrode layer having a top exposed surface (**511a**);

depositing a precipitation agent (**polar solvent, ¶ [0124]**) upon said lower electrode layer (**511**) (**¶ [0125]-[0126]**); and

depositing an organic material (**PEDOT, PSS ¶ [0124]**) upon said precipitation agent (**polar solvent, ¶ [0124]**) after depositing said precipitation agent, said organic

material drying into an organic layer (**510a**), said organic layer having a substantially flat and uniform profile (**¶ [0127]**).

With respect to the limitations of “depositing a precipitation agent upon said lower electrode layer” and “depositing an organic material upon said precipitation agent after depositing said precipitation agent,” Takano teaches that the first composition (**510c**), including an organic material and a precipitation agent (**¶ [0124]**), are deposited on the electrode **511**. Takano further states that the droplets **510c** of the first composition may be ejected onto the same electrode surface **511a** by a plurality of separate operations (**¶ [0125]**). Therefore, Takano teaches a precipitation agent (**polar solvent**) is deposited on the lower electrode **511** and an organic material (**PEDOT, PSS**) is deposited on the precipitation agent after depositing said precipitation agent (“**plurality of separate operations,**” **¶ [0125]**).

With respect to **claim 16**, Takano teaches a method according to claim 14 as set forth above, wherein said organic electronic device is an organic light emitting diode (OLED) display (**¶ [0109]-[0010]**).

With respect to **claim 17**, Takano teaches a method according to claim 16 as set forth above, wherein said lower electrode layer (**511**) functions as an anode (**¶ [0111] and [0138]**).

With respect to **claim 18**, Takano teaches a method according to claim 17 as set forth above, wherein said organic layer is a conducting polymer layer (**¶ [0123]-[0124]**).

With respect to **claim 19**, Takano teaches method according to claim 18 as set forth above, further comprising: fabricating an emissive layer (**510b**) above said

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conducting polymer layer, said emissive layer emitting light upon charge recombination (pg. 11, [0135]-[0136]).

With respect to **claim 20**, Takano teaches the method according to claim 19 as set forth above, further comprising: fabricating a photo-resist layer (**512a**) upon said lower electrode layer (**511**), said photo-resist layer patterned into a plurality of banks to define pockets upon said lower electrode layer (**¶ [0112]-[0113]**).

With respect to **claim 29**, Takano teaches the method according to claim 14, wherein the organic material mixes with the precipitation agent (**¶ [0124]**).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims **14**, **16-23**, and **27** are rejected under 35 U.S.C. 103(a) as being obvious over Seki et al. (US 2004/0144975, presented in previous Office Action).

With respect to **claim 14**, Seki teaches a method of fabricating an organic electronic device (**Figs. 1-6; ¶ [0080]-[0085], [0103]-[0106], [0110]-[0117] and [0142]-[0143]**), said method comprising:

 patterning a lower electrode layer (**3**) upon a substrate (**1**), said lower electrode layer having a top exposed surface (**Fig. 4**);

 depositing a precipitation agent (**polar solvent**) upon said lower electrode layer (**¶ [0142]**); and

 depositing an organic material (**6a**) upon said precipitation agent (**polar solvent containing “acetylenic alcohol surfactant”**), said organic material drying into an organic layer (**6**), said organic layer having a substantially flat and uniform profile (**¶ [0056], [0101], [0143]**).

Regarding claim 14, Seki's method involves depositing a composition (**6a**) including an organic conductive material and at least one species of solvent (**precipitation agent**) on the anodes (**lower electrode layer**) (**¶ [0143]**).

Thus, Seki teaches all the limitations of the claim with the exception of disclosing: wherein the organic material is deposited after depositing the precipitation agent.

However, note that selection of any order of performing process steps or mixing ingredients is prima facie obvious in the absence of new or unexpected results; In re Burhans, 154 F.2d 690, 69 USPQ 330 (CCPA 1946); In re Gibson, 39 F.2d 975, 5 USPQ 230 (CCPA 1930). MPEP 2144.04.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Seki, and deposit the organic material after depositing the precipitation agent, since Applicant has not disclosed that the order of the steps are for a particular, unobvious purpose, produce an unexpected result, or are otherwise critical, and it appears prima facie that the method would have a similar utility using a different order of process steps.

With respect to **claim 16**, Seki teaches the method according to claim 14 as set forth above, wherein said organic electronic device is an organic light emitting diode (OLED) display (**¶ [0121]**).

With respect to **claim 17**, Seki teaches the method according to claim 16 as set forth above, wherein said lower electrode layer (**3**) functions as an anode (**¶ [0121]**).

With respect to **claim 18**, Seki teaches the method according to claim 17 as set forth above, wherein said organic layer is a conducting polymer layer (**¶ [0083]**).

With respect to **claim 19**, Seki teaches the method according to claim 18 as set forth above, further comprising: fabricating an emissive layer (**7**) above said conducting polymer layer, said emissive layer emitting light upon charge recombination (**¶ [0129]-[0131]**).

With respect to **claim 20**, Seki teaches the method according to claim 19 as set forth above, further comprising: fabricating a photo-resist layer (**4**) upon said lower electrode layer (**3**), said photo-resist layer patterned into a plurality of banks to define pockets upon said lower electrode layer (**¶ [0133]-[0134]**).

With respect to **claim 21**, Seki teaches the method according to claim 20 as set forth above, wherein said precipitation agent is printed into said pockets (**¶ [0141]-[0143]**).

With respect to **claim 22**, Seki teaches the method according to claim 20 as set forth above, wherein said organic material is deposited by printing (**¶ [0141]-[0143]**).

With respect to **claim 23**, Seki teaches the method according to claim 14 as set forth above, wherein said organic device is an organic transistor (**¶ [0170]-[0174]**).

With respect to **claim 27**, Seki teaches the method according to claim 14 as set forth above, wherein said precipitation agent includes dicationic salt (**acetylenic alcohol**). The limitation is inherent because the raw material used to fabricate acetylene is calcium carbonate, which is a dicationic salt.

4. **Claims 15 and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Seki (presented above) as applied to claim 14 above, and further in view of Sellinger (US 6,861,091, previously presented).

With respect to **claim 15**, Seki teaches all the limitations of the claim, as set forth above in claim 14, with the exception of disclosing: wherein the precipitation agent is deposited by spin coating.

However, Sellinger discloses a method of forming organic thin films in which the organic material and the precipitation agent ("**organic solvent**") are deposited by spin coating (**col. 9, Ins. 20-48 and col. 18, Ins. 37-40**).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Seki with the teaching of Sellinger, because the

spin coating deposition would have been considered a mere substitution (**col. 3, Ins. 54-58 and col. 18, Ins. 37-40**) of art recognized equivalent processes MPEP 2144.06.

Regarding claim 15, substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. *In re Fount* 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *Graver Tank & Mfg. Co. Inc. v. Lindle Air Products Co.* 85 USPQ 328 (USSC 1950).

With respect to **claim 25**, Sellinger teaches wherein the precipitation agent (organic solvent) is dioxane (**col. 9, Ins. 20-25**).

5. **Claim 24** is rejected under 35 U.S.C. 103(a) as being unpatentable over Seki (presented above) as applied to claim 14 above, and further in view of Mueller et al. (US 6,316,786, previously presented) and Heeney (US 2003/0047719, previously presented).

With respect to **claim 24**, Seki teaches all the limitations of the claim, as set forth above in claim 14, with the exception of disclosing wherein said device is an organic solar cell.

However, Mueller teaches the fabrication of organic opto-electronic devices such as OLEDs, organic displays, organic solar cells, and photodiodes (**col. 1, Ins. 5-10**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Seki with the teaching of Mueller, because organic solar cells were well known devices to artisans in the art of organic semiconductor devices at the time of the invention (**Heeney ('719): ¶ [0017]**).

6. **Claims 30 and 31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Takano et al. (presented above).

With respect to **claims 30 and 31**, Takano teaches a method of fabricating an organic electronic device (**FIGs. 11-16; ¶ [0121]-[0127]**), the method comprising:

patterning a lower electrode layer (**511; FIG. 12**) upon a substrate (**501**), said lower electrode layer having a top exposed surface (**511a**);

depositing a precipitation agent (**polar solvent, ¶ [0124]**) upon said lower electrode layer (**511**) (**¶ [0125]-[0126]**); and

depositing an organic material (**PEDOT, PSS ¶ [0124]**) upon said precipitation agent, said organic material drying into an organic layer (**510a**), said organic layer having a substantially flat and uniform profile (**¶ [0127]**).

With respect to the limitations of “depositing a precipitation agent upon said lower electrode layer” and “depositing an organic material upon said precipitation agent after depositing said precipitation agent,” Takano teaches that the first composition (**510c**), including an organic material and a precipitation agent (**¶ [0124]**), are deposited on the electrode **511**. Takano further states that the droplets **510c** of the first composition may be ejected onto the same electrode surface **511a** by a plurality of separate operations (**¶ [0125]**). Therefore, Takano teaches a precipitation agent (**polar solvent**) is deposited on the lower electrode **511**, and an organic material (**PEDOT, PSS**) is deposited on the precipitation agent after depositing said precipitation agent (“**plurality of separate operations,**” **¶ [0125]**).

Thus, Takano teaches all the limitations of the claims with the exception of disclosing: causing the particles of the organic material to become larger in size and coalesce together, through flocculation, to increase their weight and the effect of gravitational force upon the particles. However, this limitation is drawn to a function.

Note that the claimed properties or functions are presumed to be inherent or obvious when the structure or method of a reference is substantially identical to that of the claims (**MPEP 2112.01**). Therefore, where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977) and MPEP 2112.01.

Response to Arguments

7. Applicant's arguments filed on June 1, 2007, have been fully considered but they are not persuasive.

Applicant argues that Takano's polar solvent and Seki's polar solvent are not precipitation agents. This is not persuasive because both Takano's and Seki's polar solvents perform the same function as the precipitation agent claimed by the Applicant.

For example Takano states:

"When the drying treatment is performed, there occurs evaporation of the polar solvent contained in the droplets 510c of the first composition, at a location close to the inorganic bank layer 512a and the organic bank layer 512b, and in accordance with the evaporation, the hole injection/transport layer forming material is concentrated for precipitation (¶ [0126]);"

"As shown in FIG. 16, the above drying treatment also causes evaporation of the polar solvent on the electrode surface 511a, whereby a flat portion 510a of the

hole injection/transport layer forming material is formed on the electrode surface 511a (¶ [0127]).”

As stated by the Applicant, precipitation means “the process of producing a separable solid phase within a liquid medium.” Clearly, Takano teaches in the paragraphs recited above, that evaporation of the solvent, from the composition, produces a separable solid phase. Thus, Applicant’s assertion that the polar solvent is not a precipitation agent, because it dissolves the organic material, is incorrect.

Seki also teaches wherein a composition 6a, containing a polar solvent (precipitation agent), is deposited on the electrode 3 (Figs. 5-6; ¶ [0141]-[0143]), and then a drying step is performed to remove the solvent (¶ [0113]-[0117]). Thus, Seki’s composition also contains a separable solid phase which is produced when the solvent is removed by heating (¶ [0114]).

Applicant also argues that neither Takano nor Seki teach the limitation of “depositing an organic material upon said precipitation agent after depositing said precipitation agent.” This is not persuasive. Takano states:

“Further, the droplets 510c of the first composition may be ejected onto the same electrode surface 511a not only by a single operation but also a plurality of separate operations (¶ [0125]).”

This implies that a plurality of droplets will be deposited upon one another, and thus, since each droplet comprises both an organic layer and a precipitation agent (polar solvent) (¶ [0124]-[0125]), the limitation of “depositing an organic material upon said precipitation agent after depositing said precipitation agent” is anticipated by Takano.

Furthermore, note that selection of any order of performing process steps or mixing ingredients is prima facie obvious in the absence of new or unexpected results; In re Burhans, 154 F.2d 690, 69 USPQ 330 (CCPA 1946); In re Gibson, 39 F.2d 975, 5 USPQ 230 (CCPA 1930). MPEP 2144.04.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Abul Kalam whose telephone number is 571-272-8346. The examiner can normally be reached on Monday - Friday, 9 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ak

/Thao X Le/
Primary Examiner, Art Unit 2814

